

FORT FRANCES

**water pollution
control plant**

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ONTARIO WATER RESOURCES COMMISSION

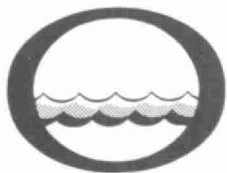
Division of Plant Operations

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Water management in Ontario

Ontario
Water Resources
Commission

135 St. Clair Ave. W.
Toronto 7
Ontario


We are pleased to present you with the Operating Summary for the water pollution control facilities operated for you during 1968.

Both the financial and technical information presented should be of assistance to your present and future planning in this important phase of municipal activity.

A new format has been devised to allow greater readability with equally detailed content. We trust that this will meet with your approval.

Our staff wish to express their appreciation for your co-operation throughout the year.


D. S. Caverly,
General Manager.


D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

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FORT FRANCES
water pollution control plant

operated for

THE TOWN OF FORT FRANCES

by the

ONTARIO WATER RESOURCES COMMISSION

1968 ANNUAL OPERATING SUMMARY

FOREWORD

● This operating summary outlines the project's technical capabilities and financial status in 1968. Such information mirrors past and present performance, but a major intention is to anticipate the future -- to solve problems before they occur.

The new format in which this year's data are presented is designed to offer a higher level of readability than in the past, without a corresponding decrease in compactness, accuracy and detail.

Although your Regional Operations Engineer carries the major responsibility for the contents of the report, those involved in its preparation are attached to several Commission sections and divisions. The statistics section of the Division of Plant Operations compiled the information for the graphs and charts. The draughting section of the Division of Sanitary Engineering drew the graphs. The Division of Finance provided all cost data.

Only the close co-operation of these departments allowed the publication of this summary.

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'68 REVIEW

During 1968, 736.20 million gallons were treated at the cost of \$36,705.23. A cost of \$49.80 per million gallons treated is a decrease of 2.5 percent compared to 1967. The decreased costs may be due to an increased flow of 6 percent over 1967. Average removal efficiencies of 52 percent BOD and 64 percent for suspended solids were achieved for the year.

The water pollution control plant is staffed by a chief operator and two operators, who provide supervision eight hours per day, 365 days a year.

Regular inspections were carried out by the operations engineer during 1968.

PROJECT COSTS

NET CAPITAL COST (Final)	\$1,894,347.61
DEDUCT - Portion Financed by CMHC-MDLB (Final)	<u>1,276,239.07</u>
Long Term Debt to OWRC	\$ <u>618,108.54</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1968	\$ <u>68,489.95</u>
Net Operating	\$ 36,705.23
Debt Retirement	13,013.00
Reserve	11,026.41
Interest Charged	35,632.93
	<hr/>
TOTAL	\$ <u>96,377.57</u>

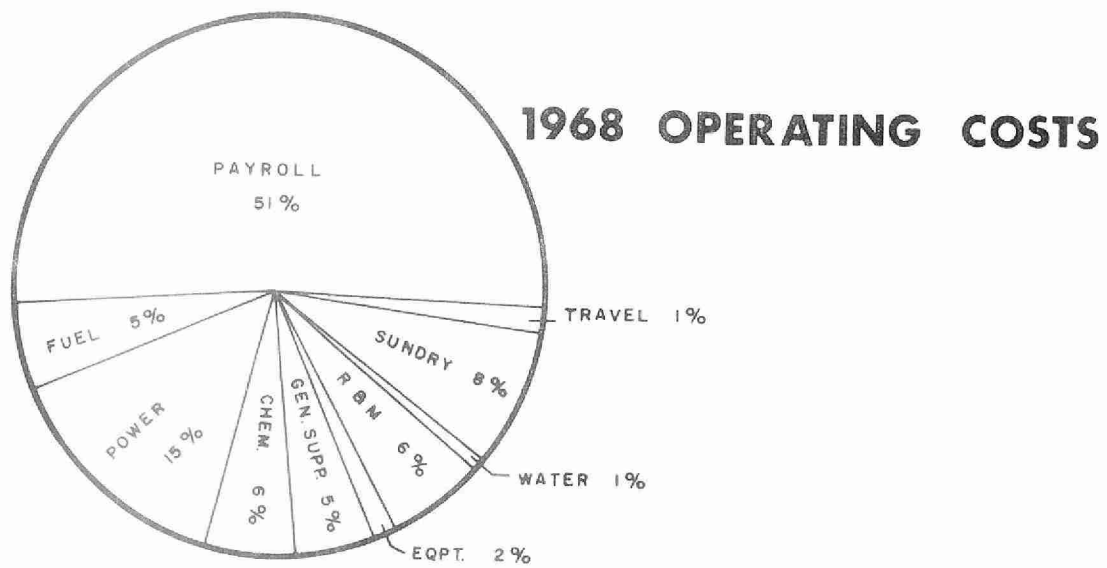
RESERVE ACCOUNT

Balance at January 1, 1968	\$ 46,584.52
Deposited by Municipality	11,026.41
Interest Earned	3,006.79
	<hr/>
	\$ 60,617.72
Less Expenditures	<hr/>
Balance at December 31, 1968	\$ <u>60,617.72</u>

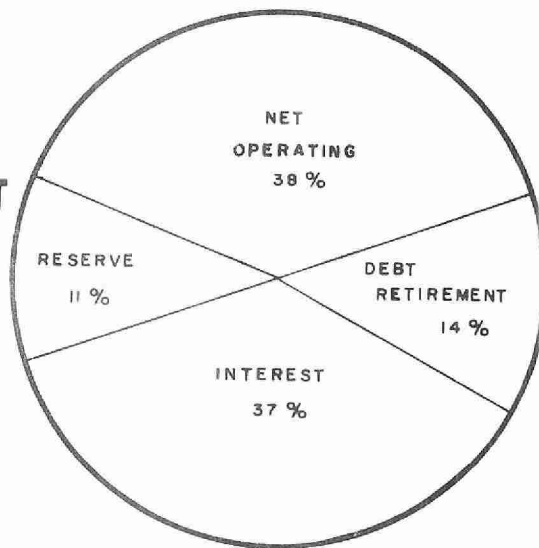
Monthly Operating Costs

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY	WATER	TRAVEL
JAN	1696.71	1372.29	-	-	184.68	-	116.36	-	13.14	10.24	-	-
FEB	3045.99	1372.29	-	389.71	479.19	-	76.76	-	500.49	202.55	25.00	-
MAR	3697.30	2169.27	-	414.90	526.33	-	133.64	-	152.42	275.74	25.00	-
APRIL	2282.38	1381.91	-	49.00	383.94	-	247.23	-	-	195.30	25.00	-
MAY	2974.01	1372.29	-	372.81	492.05	411.08	27.69	-	8.00	290.09	-	-
JUNE	2132.90	1342.00	-	-	267.30	-	93.48	39.04	122.38	154.20	32.50	82.00
JULY	2984.88	1150.86	264.92	-	430.59	411.08	154.39	203.74	40.00	189.53	32.50	107.27
AUG	2573.34	1413.40	554.11	-	412.14	-	119.74	-	8.00	33.45	32.50	-
SEPT	3067.95	941.36	352.02	-	632.98	411.08	103.32	134.40	195.32	182.97	32.50	82.00
OCT	2603.03	954.14	221.42	-	193.43	411.08	205.38	-	515.88	101.70	-	-
NOV	4651.71	1473.98	-	404.35	743.95	411.08	221.35	-	467.13	782.87	65.00	82.00
DEC	4995.03	2633.67	-	307.68	736.72	-	346.25	172.96	66.40	557.35	65.00	109.00
TOTAL	36705.23	17577.46	1392.47	1938.45	5483.30	2055.40	1845.59	550.14	2089.16	2975.99	335.00	462.27

* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE \$1,587.60



TOTAL ANNUAL COST



Yearly Operating Costs

YEAR	M.G.TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1965	562,759	\$29,310.65	\$52.08	-
1966	762,339	32,057.25	42.05	11 cents
1967	691,262	35,624.59	51.54	13 cents
1968	736.2	36,705.23	49.86	11 cents

Process Data

The Fort Frances plant is a primary water pollution control plant, and includes a single-stage digester.

The average daily flow in 1968 was 2.00 mgd and the flows ranged from 1.13 mgd to 3.72 mgd. Plant capacity is 2.00 mgd and flows exceeded plant capacity six out of every ten days.

The effluent was chlorinated from May through October at a dosage of 2.9 mg/l.

An average of 48 cubic yards of liquid digested sludge was hauled per month.

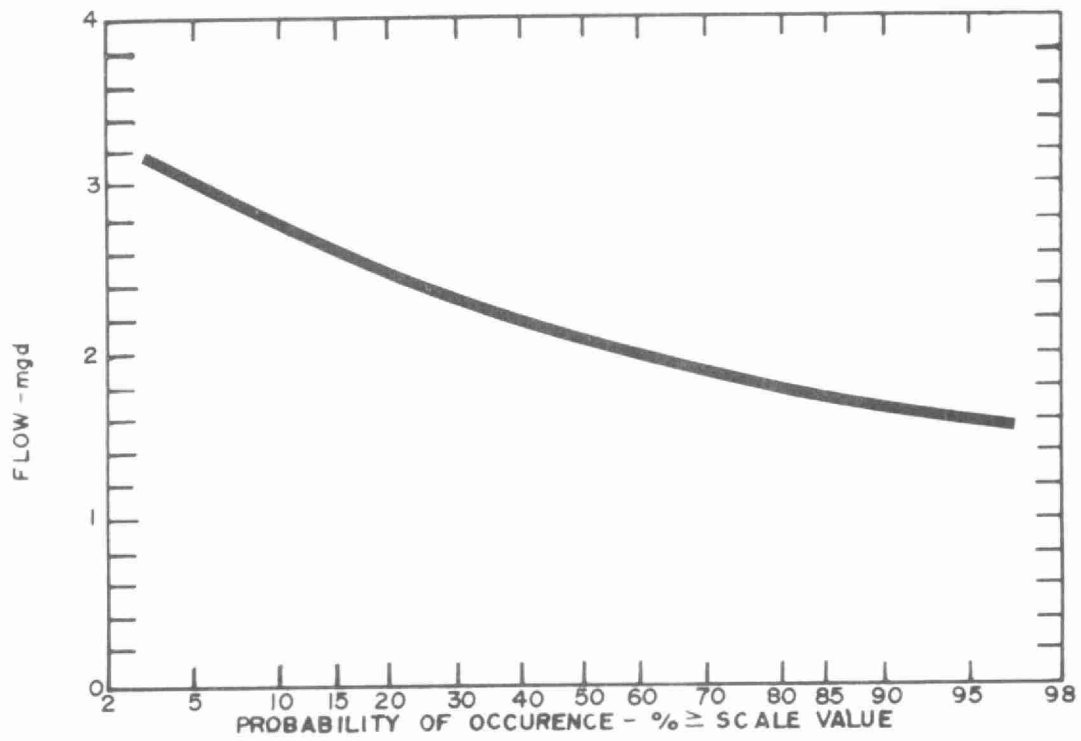
PLANT FLOWS and CHLORINATION

MONTH	TOTAL FLOW mg	AVERAGE DAILY FLOW mg	MAXIMUM DAILY FLOW mg	MINIMUM DAILY FLOW mg	CHLORINE USED 10 ³ lbs.	DOSAGE mg/l
JAN	55.2	1.78	2.13	1.67	0	-
FEB	50.0	1.72	1.67	1.55	0	-
MAR	58.7	1.89	2.95	1.43	0	-
APR	70.6	2.35	3.09	1.96	0	-
MAY	63.2	2.04	2.30	1.78	1.01	3.1
JUN	74.5	2.48	3.52	1.90	2.22	3.0
JUL	72.8	2.35	3.45	1.34	2.49	3.4
AUG	52.0	1.68	2.81	1.22	1.86	3.6
SEPT	62.1	2.07	3.11	1.13	1.83	2.9
OCT	77.1	2.49	3.72	2.08	2.22	2.9
NOV	54.2	1.81	2.13	1.56	0	-
DEC	45.8	1.48	1.61	1.34	0	-
TOTAL	73.62	-	-	-	11.63	-
AVERAGE	-	2.00	-	-	1.94	2.9

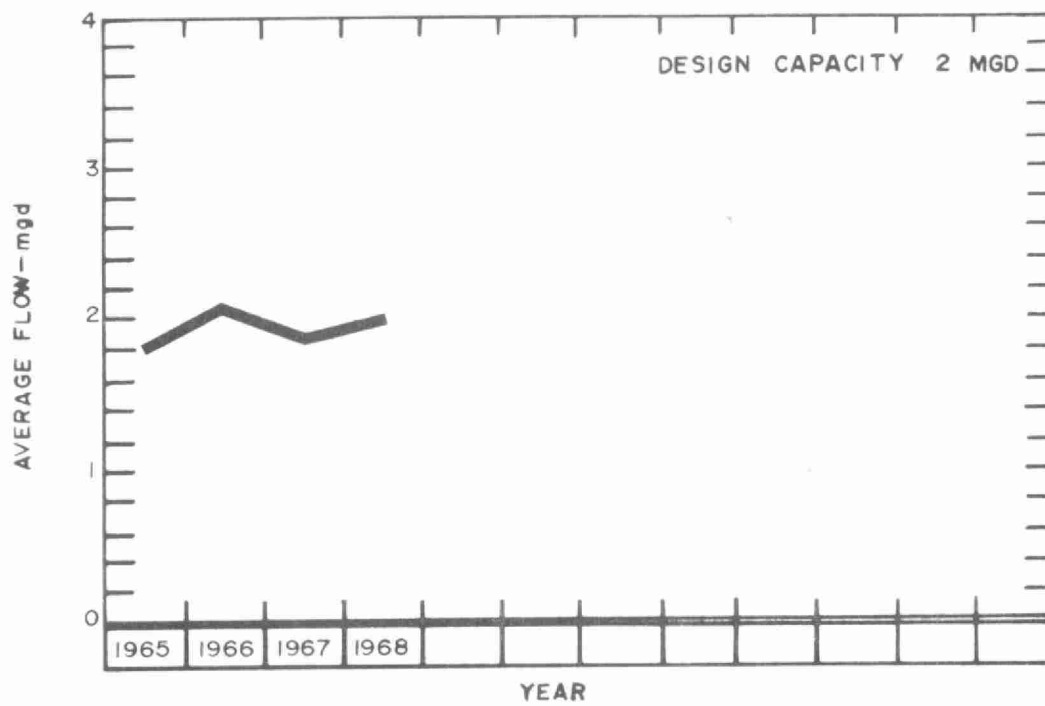
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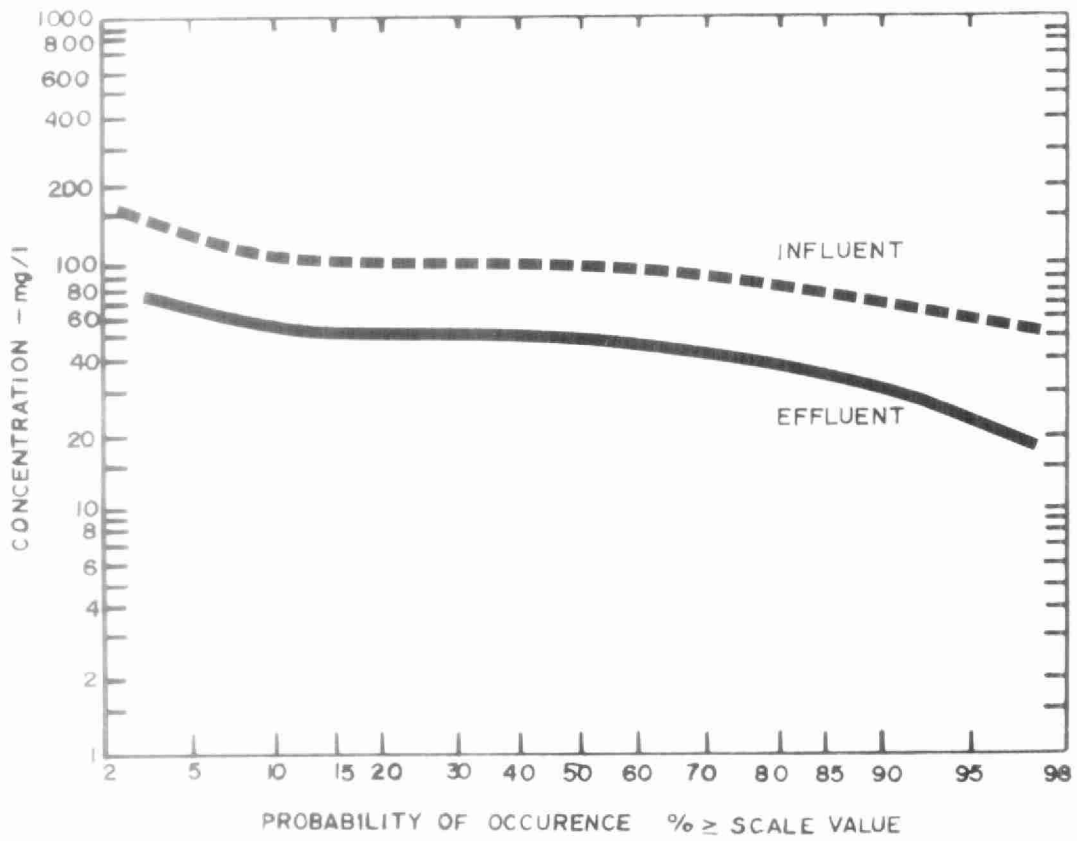
The average daily flow was 2.00 mgd. The maximum daily flow was 3.72 mgd, while the minimum daily flow was 1.13 mgd.

The chlorine consumption was 1940 lbs. per month, and was fed at a rate of 2.9 mg/l to give the required residual of 0.5 mg/l at the out-fall.

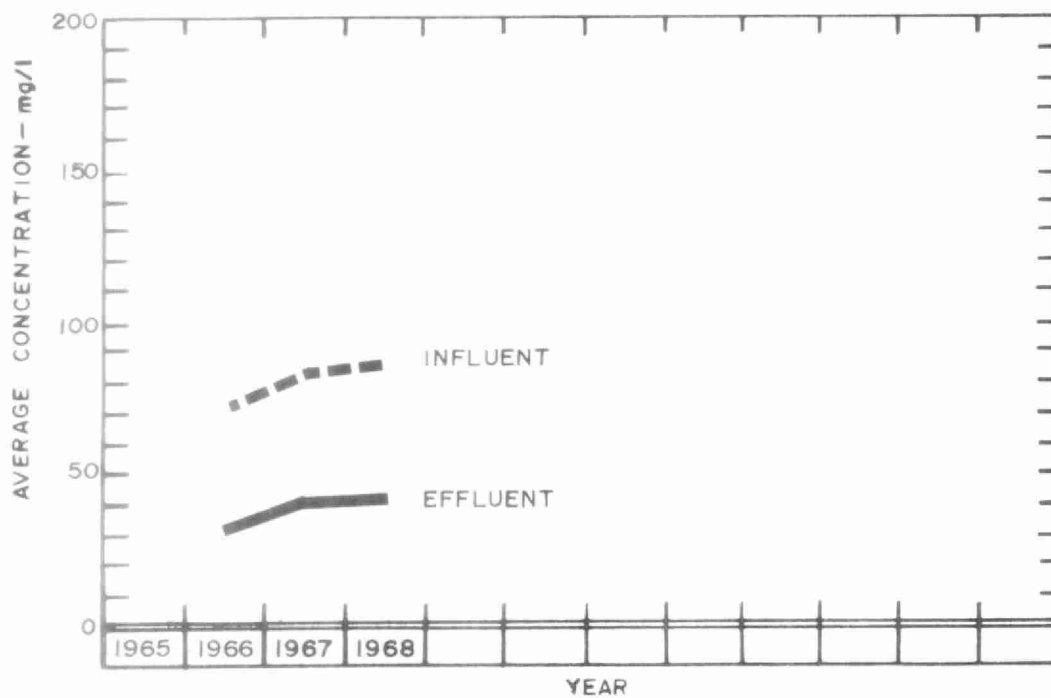


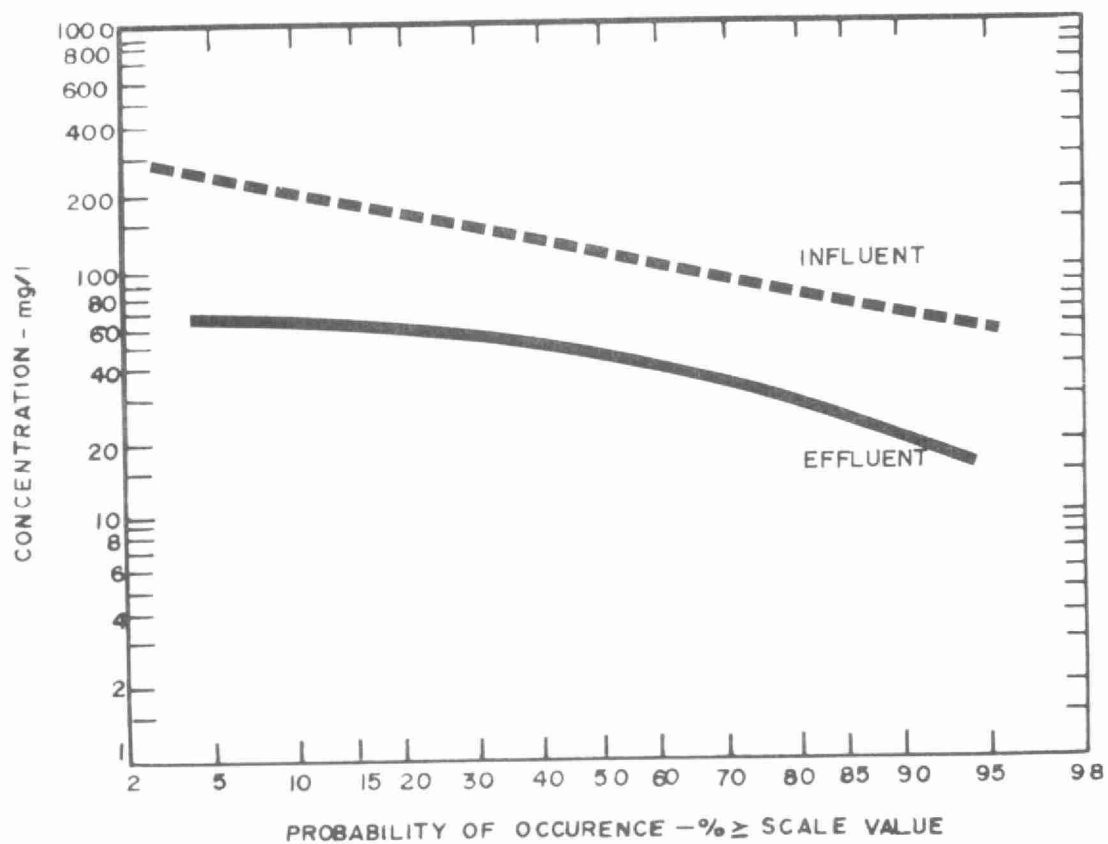
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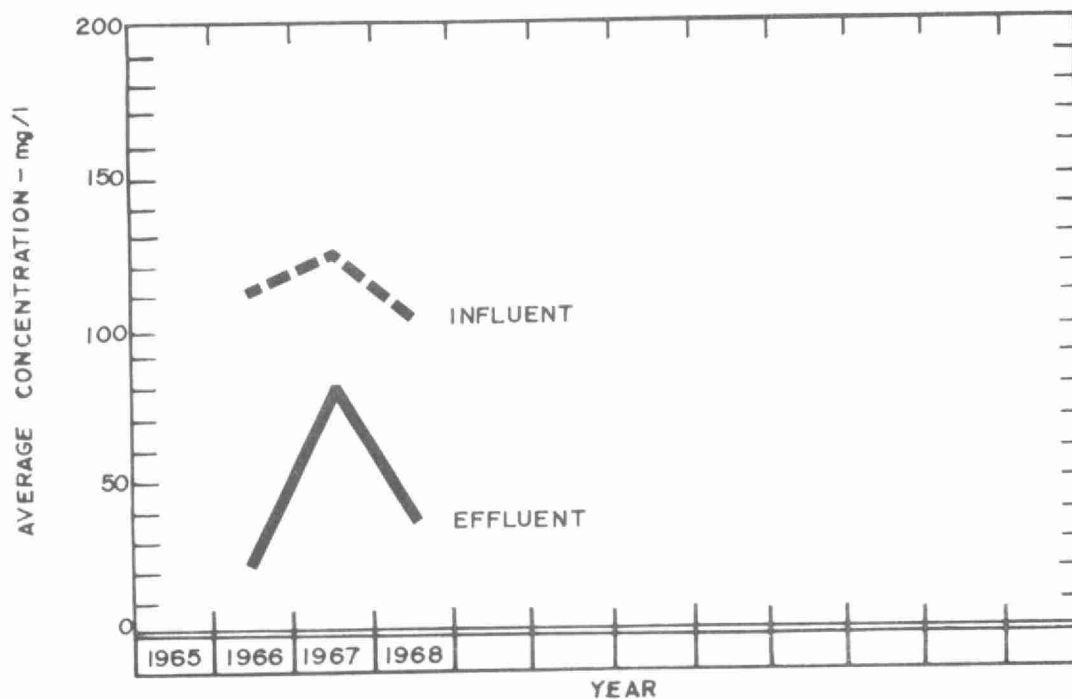


BIOCHEMICAL OXYGEN DEMAND





SUSPENDED SOLIDS



PLANT EFFICIENCY

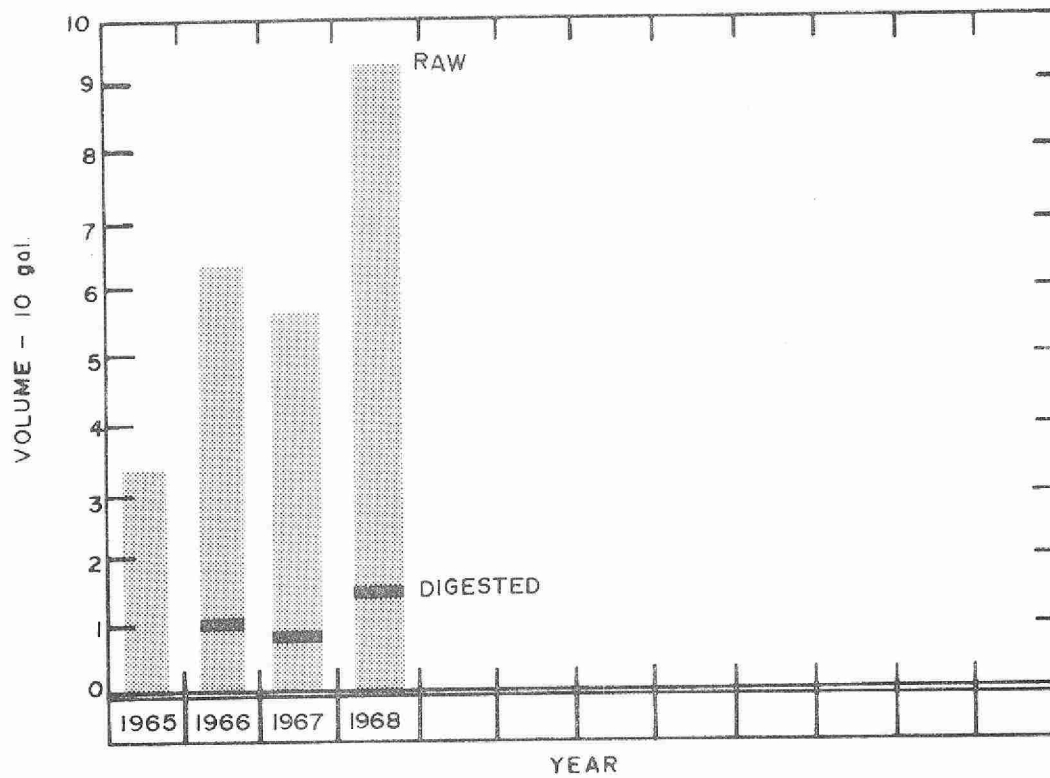
MONTH	BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				GRIT
	INF CONC ^N mg/l	EFF CONC ^N mg/l	RED ^N %	REMOVAL 10 ³ lb	INF CONC ^N mg/l	EFF CONC ^N mg/l	RED ^N %	REMOVAL 10 ³ lb	REMOVAL ft ³
JAN	68	29	57	21.5	54	39	28	8.3	10
FEB	87	49	44	19.0	-	-	-	-	-
MAR	101	44	56	33.4	-	39	-	-	-
APR	100	46	54	38.1	-	-	-	-	15
MAY	80	44	45	22.7	114	57	50	36.0	15
JUN	80	36	55	32.7	108	36	68	53.6	30
JULY	90	44	51	33.5	101	30	70	51.7	50
AUG	80	40	50	20.8	148	30	80	61.4	35
SEPT	88	45	49	26.7	171	51	70	74.6	30
OCT	98	37	62	47.0	125	35	72	69.4	50
NOV	74	38	49	19.5	68	35	49	17.9	8
DEC	78	37	53	18.8	95	38	60	26.1	10
TOTAL	-	-	-	360.7	-	-	-	-	-
AVERAGE	85	41	52	30.1	109	39	64	44.3	25.3

COMMENTS

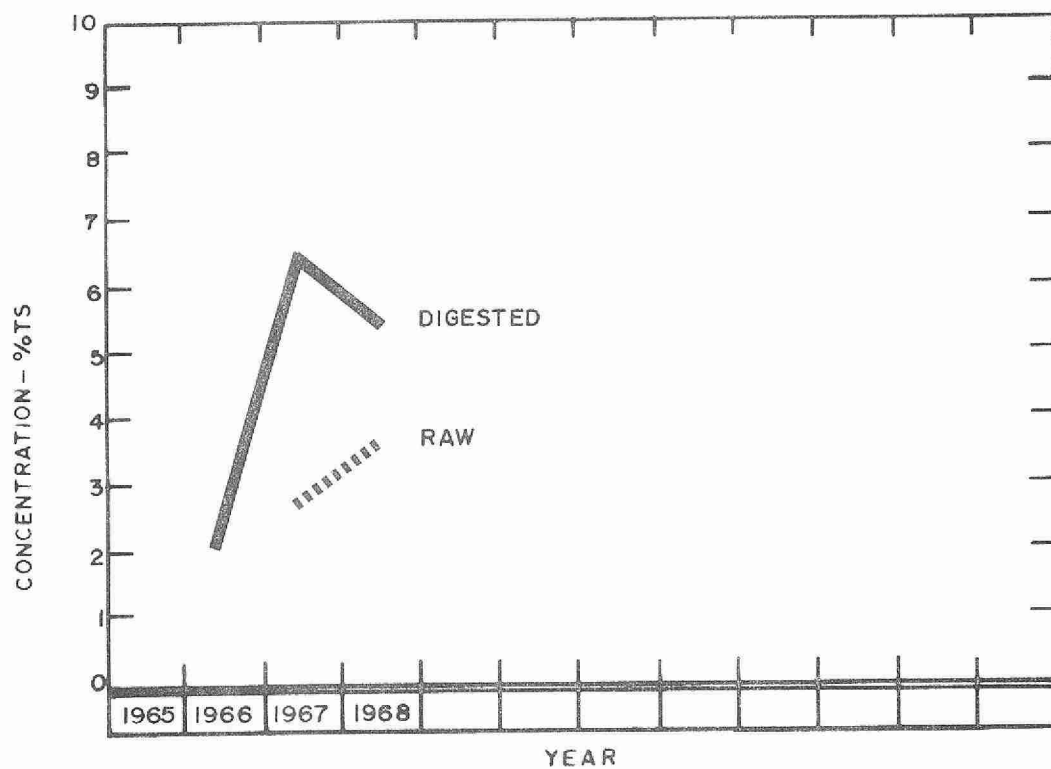
The average BOD and suspended solids concentrations in the influent were 85 and 109 mg/l.

The average BOD and suspended solids concentrations in the effluent were 41 and 39 mg/l.

The reduction efficiency was 52% for BOD and 64% for suspended solids. This is a satisfactory average.



DIGESTION



SLUDGE DIGESTION and DISPOSAL

MONTH	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT		SLUDGE DISPOSAL	
	VOLUME 10 ³ gal	T. S. %	V. S. %	VOLUME 10 ³ gal	T. S. %	V. S. %	VOLUME 10 ³ gal	T. S. %	LIQUID yd ³	DEWATERED yd ³
JAN	59.9	1.3	68	11.1	7.1	33	-	-	66	
FEB	42.8	-	-	12.6	-	-	-	-	75	
MAR	71.0	-	-	10.1	3.7	73	-	-	60	
APR	87.1	-	-	11.1	-	-	-	-	66	
MAY	134.8	-	-	8.1	-	-	-	-	48	
JUN	83.7	4.6	55	50.1	4.2	64	-	-	30	
JUL	109.6	4.3	47	10.0	6.0	39	109.1	.1	59	
AUG	73.7	4.0	52	4.0	5.5	53	76.3	.6	24	
SEPT	60.3	4.0	58	6.0	4.2	42	46.0	.4	36	
OCT	79.0	4.0	50	6.0	6.0	45	88.0	.2	36	
NOV	54.1	2.5	62	5.1	8.0	46	43.7	.3	36	
DEC	67.0	3.0	71	7.1	5.0	52	70.0	.3	42	
TOTAL	922.0	-	-	141.3	-	-	463.1*		578	
AVERAGE	76.8	3.5	58	11.7	5.5	50	77.2	.3	48	

* 6 month data

COMMENTS

The average monthly raw sludge flow was 76,800 gallons.

The digested sludge handled was 11,700 gallons per month.

The supernatant flows are high, and are estimated.

The sludge thickening process is reasonable for a single stage digester, i. e., from 3.5% total solids in the raw to 5.5% total solids in the digested sludge.



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CONCLUSIONS

The plant was well maintained and operated, and satisfactory treatment was provided throughout the year. It is noted that in 1968 removal efficiencies of both BOD and suspended solids increased considerably from 1967.

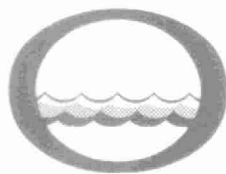
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